

Reading Primary Literature

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Scientists first publish the results of their observations and experiments in the primary literature, generally as articles in scientific journals but occasionally in books. These have the same subsections (Introduction, Methods, Results, Discussion, References) as the lab reports you have written, preceded by an Abstract or followed by a Summary. The Methods section should include enough information that someone else could repeat the observations or experiment, and the Results and Discussion should be separated so that the reader is free to review the data separately from whatever bias may be introduced by the authors' interpretations.

Your group will need to choose a relevant primary literature article for the entire class to read, from the list given at the end of the lab you choose to present to the class. Be sure that the reading you choose actually is primary literature (you should be able to tell by looking at it). You will be able to find PDF's of some articles by just typing their titles into Google. For others, the CCSU library has a good collection of animal behavior journals, and of taxonomically-oriented journals that include animal behavior articles, and some of our subscriptions include online access to electronic versions (use the E-journal locator link on the Library's website). My private collection is somewhat patchy; some of it is in the Biology conference room across the hall from my office, and some is in my office: you're welcome to read these, and I'll make you copies of articles if you'd like, but please don't remove them from the room where they are normally kept. Some articles are not available by any of these methods, and you'd need to use Interlibrary Loan to get them: if so, be sure to allow a couple of weeks for them to arrive.

Here are things to look for, try to understand, and write questions about and discuss if they seem interesting or confusing, in a primary literature article:

Abstract or Summary: An overview of the research, from rationale through methods through results and interpretation, in a single paragraph. It's a good idea to start by reading the Abstract or Summary to get an overview of the article, but we'll be focusing on the details; you can read this section again after you've read the rest of the article, to determine whether it adequately and accurately represents the article.

Introduction: A statement of the rationale for the research, the hypothesis or hypotheses being tested, and a review of related research. Does the rationale make logical sense? Does this research seem to have a place in the field in which the authors have put it? Do the authors seem to be aware of all relevant alternative hypotheses that they might want to consider?

Methods: Are these described in sufficient detail that you could repeat the study, or are there other things you would need to know? Has the design included adequate controls for variables the researcher is not trying to test? Are the experiments elegantly designed, so that multiple alternative hypotheses may be rejected with a single test?

Results: Are these presented in a way that is easy to understand? If so, how is this done? If not, what are the problems, and how might they be fixed? Is redundancy kept to a minimum? Are

there confusing headings in tables or missing axis labels in graphs? Are there other ways in which graphs could be improved? Can you understand what the statistical test or tests were testing, and exactly what data were being compared? Do the p-values indicate that hypotheses are supported, or should be rejected? (Also refer to the handout on Interpreting results of statistical tests.) Do the authors seem to be trying to unfairly bias your interpretation of the results, and if so, how are they doing this, and how could it be avoided?

Discussion: Do you agree with the authors' interpretation of their data? Do they draw logical comparisons with related research?

The class discussion of the article should cover anything that seems worthy of discussion in the points above, and also a discussion of how the experiment being done by the class relates to the article.